ELECTRICAL MANUAL

ZWACKERY U.R.

Bally

MIDWAY MFG. CO.

10601 W Belmont Avenue
Franklin Park, Illinois 60131
U.S.A.

Phone (312) 451-9200 Cable Address MIDCO Telex No.: 72-1596

0385-00300-0200

WARNING
THIS GAME MUST BE GROUNDED. FAILURE TO DO SO MAY RESULT IN DESTRUCTION TO ELECTRONIC COMPONENTS.

WARNING: This equipment generates uses and can radiate radio frequency energy and if not and used in accordance with the instructions manual may cause interference to radio communications. It has been tested and found to comply with the limits for a CLASS A computing device pursuant to SUBPART J of PART 15 of FCC RULES. which are designed to provide reasonable protection against such interference when operated in a commerical environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

ELECTRICAL BULLETIN: FOR ALL APPARATUS COVERED BY THE CANADIAN STANDARDS ASSOCIATION (CSA) STANDARD C22.2 NO. 1, WHICH EMPLOYS A SUPPLY CORD TERMINATED WITH A POLARIZED 2-PRONG ATTACHMENT PLUG.

CAUTION: TO PREVENT ELECTRIC SHOCK DO NOT USE THIS (POLARIZED) PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

ATTENTION: POUR PREVENIR CHOCS ELECTRIQUES NE PAS UTILISER CETTE FICHE POLARISEE AVEC UN PROLONGATEUR. UNE PRISE DE COURANT OU UNE AUTRE SORTIE DE COURANT, SAUF SI LES LAMES PEUVENT ETRE INSEREES A FOND SANS EN LAISSER AUCUNE PARTIE A DECOUVERT.

Bally MIDWAY™ 10601 West Belmont Avenue Franklin Park Illinois, 60131 phone (312) 451-9200

Printed in U.S.A.

ZWACKERY U. R.
ELECTRICAL MANUAL
TABLE OF CONTENTS

DESCRIPTION **PAGE NO.**

SCHEMATICS AND WIRING DIAGRAMS

BALLY/MIDWAY'S ZWACKERY
U.R. #0385
ROM/EPROM PART NUMBERS

UNPROGRAMMED VENUS CPU A084-91668-F000
PROGRAMMED VENUS CPU A084-91668-A385

POS.	MIDWAY PART NUMBER
A6	385A-42AAE-JXRD
B6	385A-42AAE-KXRD
A7	385A-42AAE-LXRD
B7	385A-42AAE-MXRD
A8	385A-42AAE-NXRD
B8	385A-42AAE-PXRD
A9	385A-42AAE-RXRD
B9	385A-42AAE-TXRD
A10	385A-42AAE-UXRD
B10	385A-42AAE-VXRD
A11	385A-42AAE-WXRD
B11	385A-42AAE-YXRD
A12	385A-42AAE-ZXRD
B12	385A-42AAE-1XRD

JUMPERS	IN	OUT
JW1	**	
JW2		**
JW3	**	
JW4		**
JW5	**	
JW6		**
JW7-JW8	**	
JW9-JW14		**
JW15-JW20	**	

UNPROGRAMMED VENUS BACKGROUND A084-91672-D000
PROGRAMMED VENUS BACKGROUND A084-91672-A385

POS.	MIDWAY PART NUMBER
1H	385A-42AAE-2XRD
1G	385A-42AAE-3XRD
1F	385A-42AAE-5XRD
1E	385A-42AAE-4XRD

JUMPERS	IN	OUT
JW1		**

UNPROGRAMMED VENUS VIDEO 250 A084-91675-D000
PROGRAMMED VENUS VIDEO 250 A084-91675-A385

POS.	MIDWAY PART NUMBER
6H	385A-42AAE-AXRD
6J	385A-42AAE-BXRD
7H	385A-42AAE-EXRD
7J	385A-42AAE-FXRD
10H	385A-42AAE-CXRD
10J	385A-42AAE-DXRD
11H	385A-42AAE-GXRD
11J	385A-42AAE-HXRD

JUMPERS	IN	OUT
JW1		**
JW2		**

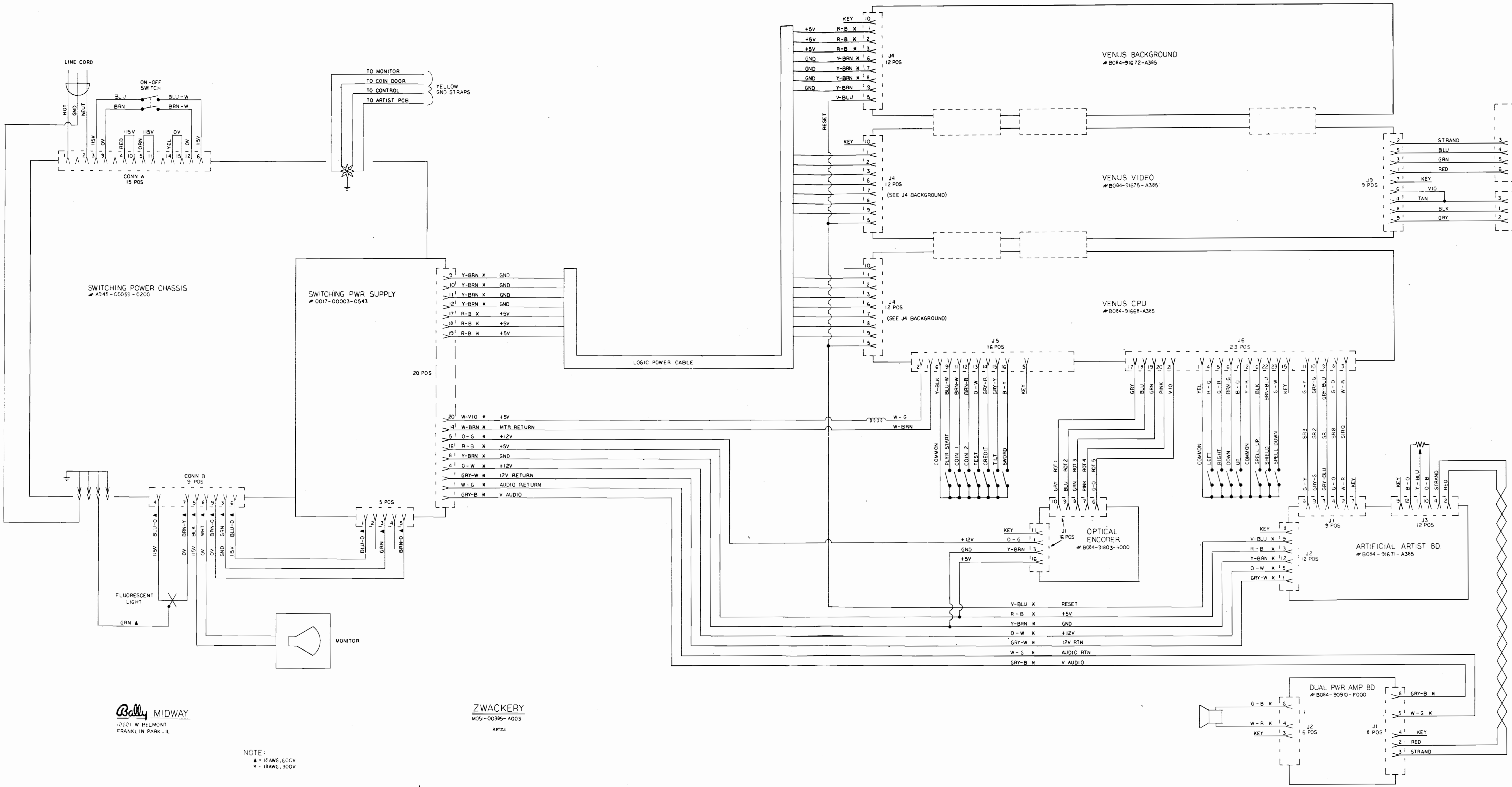
UNPROGRAMMED ARTIFICIAL ARTIST A084-91671-G000
PROGRAMMED ARTIFICIAL ARTIST A084-91671-A385

POS.	MIDWAY PART NUMBER
U7	385A-22AAE-AAMD
U17	385A-22AAE-BAMD
U8	385A-22AAE-CAMD
U18	385A-22AAE-DAMD

JUMPERS	IN	OUT
JW1	**	
JW2		**
JW3	**	

NONPROGRAMMED OPTICAL ENCODER DELUXE II A084-91803-A000

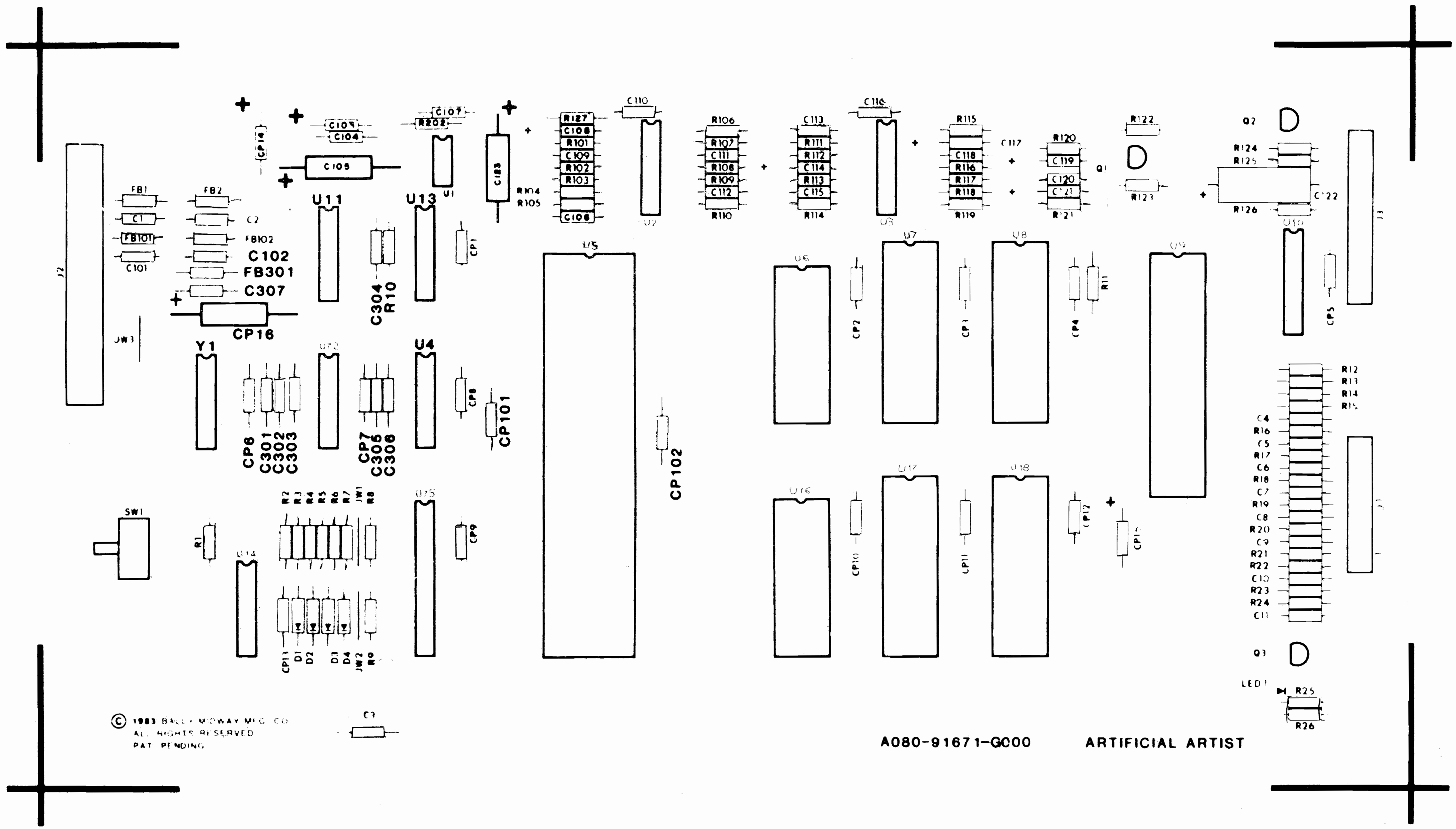
JUMPERS	IN	OUT
JW1	**	



Bally MIDWAY
10601 W BELMONT
FRANKLIN PARK, IL

ZWACKERY
M051-00385-A003
ketza

NOTE:
▲ = 18AWG, 600V
✕ = 18AWG, 300V



A080-91671-G000

ARTIFICIAL ARTIST

DIM. TOLERANCES UNLESS OTHERWISE SPEC.	
CONCENTRICITY T.I.R.	.002
FRACTIONAL	± 1/64
DECIMAL	± .005
HOLE DIA.	+ .002 — .000
ANGLE	± 1/2°
DO NOT SCALE DWG.	

FIRST USED ON

DRN C.L. — DATE 4/22/85 — SCALE

MECH CHK — MAT'L

ELEC CHK — FINISH

Bally/MIDWAY MFG. CO.
FRANKLIN PARK, IL 60131

ASSY DRAWING
ARTIFICIAL ARTIST
A084-91671-G000

SHEET 1 of 3 (2+3 of 3 "A")

REVISIONS

PART NO.
M0·5·1 -0·0·3·0·4 -G·0·1·6

M051-00304-G016 (3/3)
ARTIFICIAL ARTIST
A084-91671-G000

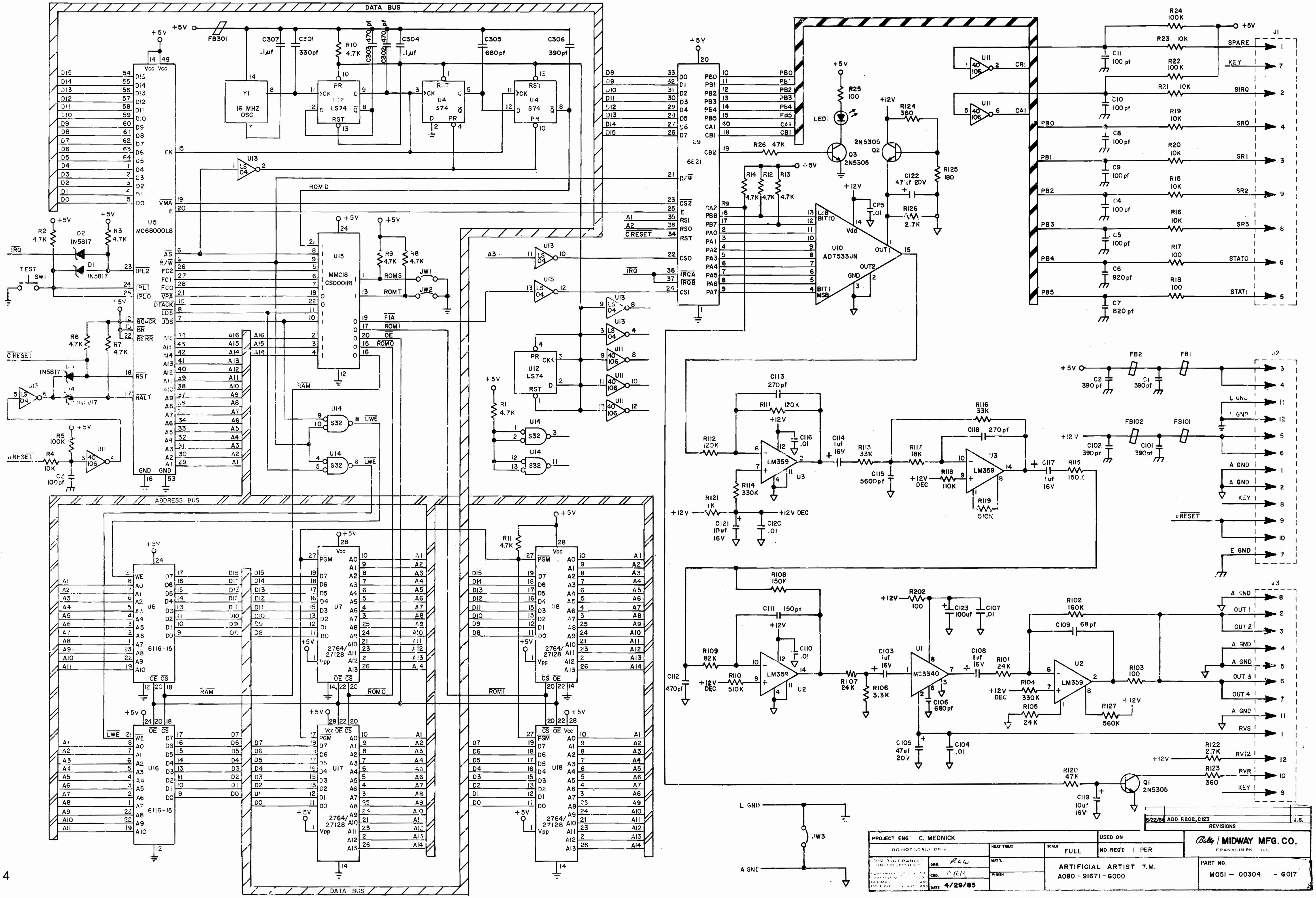
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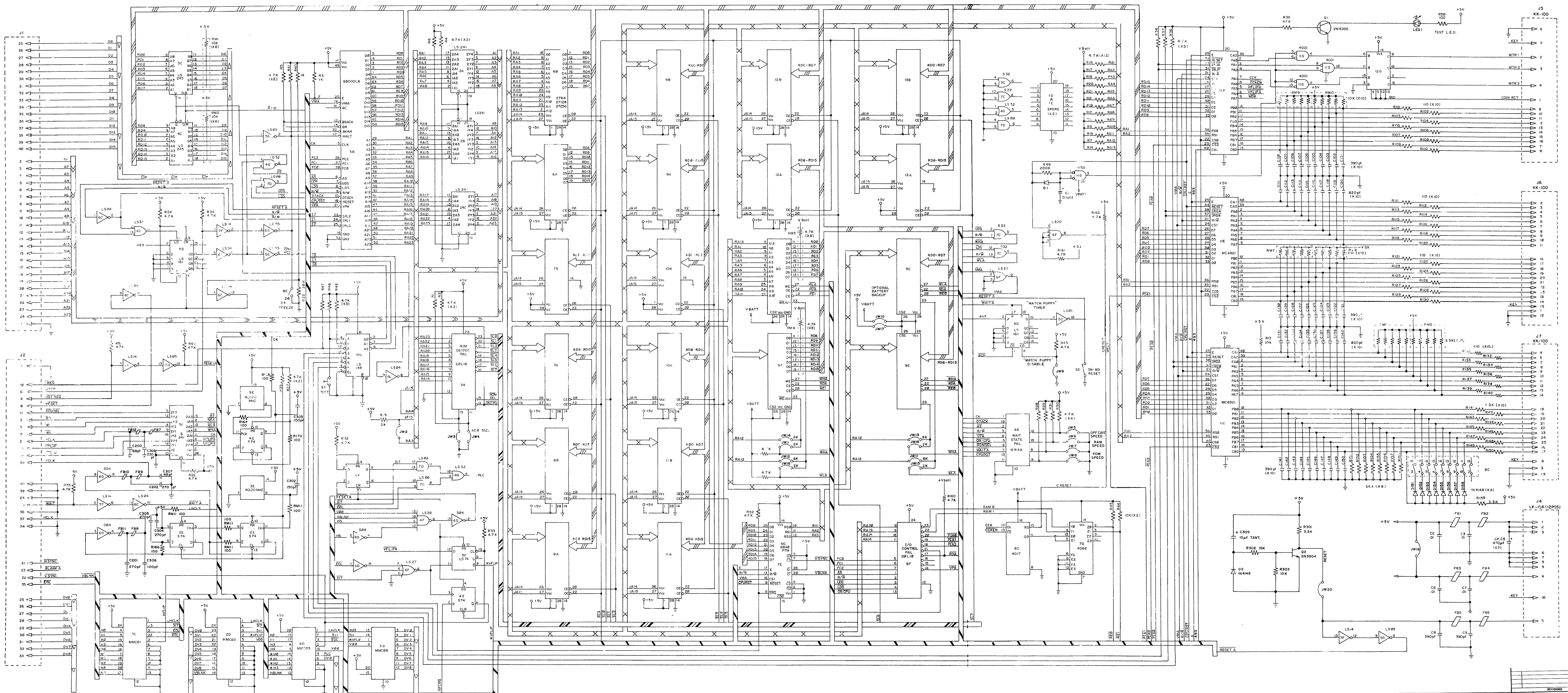
DESCRIPTION	QTY.	DESIGNATION	PART NUMBER
74S74	2	U4,U12	0304-00803-0061
14584/40106	1	U11	0304-00803-0056
6821 PIA	1	U9	0304-00803-0054
68010G8 CPU	1	U5	0A15-00803-0082
AD7533JN DAC	1	U10	0304-00803-0055
CSD002R0 PAL	1	U15	0304-00803-0052
LM359	2	U2,U3	0304-00803-0053
MC3340	1	U1	0358-00803-0002
RAM 2KX8	2	U6,U16	0304-00803-0057
ROM/EPROM	1	U7	
ROM/EPROM	1	U8	SEE ROM/EPROM
ROM/EPROM	1	U17	CHART
ROM/EPROM	1	U18	
FERRITE BEAD	5	FB1,FB2,FB101,FB102, FB301	0316-00804-0002
8 PIN IC SOCKET	1	ICS U15	110E-00001-0001
16 PIN IC SOCKET	2	ICS U10,U15A	110E-00001-0003
24 PIN IC SOCKET	2	ICS U6,U16	110E-00001-0007
28 PIN IC SOCKET	4	ICS U7,U8,U17,U18	110E-00001-0010
40 PIN IC SOCKET	1	ICS U9	110E-00001-0011
64 PIN IC SOCKET	1	ICS U5	110E-00001-0016
AUTO INSERT PIN TIN .025 SQ	8	J1	0304-00804-0009
AUTO INSERT PIN TIN .025 SQ	11	J3	0304-00804-0009
AUTO INSERT PIN TIN .045 SQ	11	J2	0304-00804-0010
ZERO OHM RES	3	JW1-JW3	117E-00001-0003
GREEN LED	1	LED 1	0360-00804-0015
SWITCH PC MTG	1	SW1	0986-00804-3100
16 MHZ XSTAL OSC	1	Y1	0304-00804-0008
PC BOARD	1		A080-91671-G000

M051-00304-G016 (2/3)
ARTIFICIAL ARTIST
A084-91671-G000

CROSS REFERENCE

DESCRIPTION	QTY.	DESIGNATION	PART NUMBER
68 PF AX CER 10%	1	C109	0307-00800-0011
100 PF AX CER	7	C3-C5,C8-C11	0304-00800-0001
150 PF AX CER 10%	1	C111	0307-00800-0010
270 PF AX CER 10%	2	C113,C118	0307-00800-0009
330 PF AX CER	1	C301	0300-00800-1402
390 PF AX CER	5	C1,C2,C101,C102,C306	0986-00800-3000
470 PF AX CER 10%	3	C112,C302,C303	0307-00800-0008
680 PF AX CER	2	C106,C305	0358-00800-0002
820 PF AX CER	2	C6,C7	0304-00800-0002
5600 PF AX CER 10%	1	C115	0307-00800-0007
.01 MF AX CER	18	C104,C107,C110 C116,C120,CP1-CP13	0986-00800-2200
0.1 UF AX CER	4	C304,C307,CP101,CP102	0986-00800-0200
1 MF RD TANT	4	C103,C108,C114,C117	0307-00800-0004
10 MF AX TANT	2	CP14,CP15	0986-00800-0700
10 MF RD TANT	2	C119,C121	0307-00800-0005
47 MF AX ELECT	2	C105,C122	0307-00800-0003
100 MF AX ELECT	2	CP16,C123	0307-00800-0006
100 OHM 1/4W CRBN	5	R17,R18,R25,R103, R202	100E-00005-0033
180 OHM 1/4W CRBN	1	R125	100E-00005-0039
360 OHM 1/4W CRBN	2	R123,R124	100E-00005-0048
1K OHM 1/4W CRBN	2	R10,R121	100E-00005-0061
2.7K OHM 1/4W CRBN	2	R122,R126	100E-00005-0071
3.3K OHM 1/4W CRBN	1	R106	100E-00005-0074
4.7K OHM 1/4W CRBN	11	R1-R3,R6-R9 R11-R14	100E-00005-0079
10K OHM 1/4W CRBN	7	R4,R15,R16,R19-R21, R23	100E-00005-0088
18K OHM 1/4W CRBN	1	R117	100E-00005-0093
24K OHM 1/4W CRBN	3	R101,R105,R107	100E-00005-0097
33K OHM 1/4W CRBN	2	R113,R116	100E-00005-0100
47K OHM 1/4W CRBN	2	R26,R120	100E-00005-0104
82K OHM 1/4W CRBN	1	R109	100E-00005-0112
100K OHM 1/4W CRBN	4	R5,R22,R24,R118	100E-00005-0115
120K OHM 1/4W CRBN	2	R111,R112	100E-00005-0118
150K OHM 1/4W CRBN	2	R108,R115	100E-00005-0120
160K OHM 1/4W CRBN	1	R102	100E-00005-0121
330K OHM 1/4W CRBN	2	R104,R114	100E-00005-0128
510K OHM 1/4W CRBN	2	R110,R119	100E-00005-0133
560K OHM 1/4W CRBN	1	R127	100E-00005-0134
IN5817	4	D1-D4	103E-00003-0009
2N5305	3	Q1-Q3	0360-00802-0012
74LS04	1	U13	0304-00803-0060
74F32/74S32	1	U14	0304-00803-0059


DATA BUS
ADDRESS BUS
U5 MC68000L8
Y1 16 MHZ OSC.
U9 6821
U10 AD7533JN
U15 MMC18 CSD00IRI
U6 6116-15
U16 6116-15
U7 2764/27128
U8 2764/27128
U17 2764/27128
U18 2764/27128
LM359
MC3340
J1
J2
J3
SPARE
KEY
SIRQ
SRO
SR1
SR2
SR3
STAT0
STAT1
L GND
A GND
E GND
OUT 1
OUT 2
OUT 3
OUT 4
RVS
RV12
RVR
uRESET
CRESET
TEST
SW1
JW1
JW2
JW3
LED1
8/22/84 ADD R202,C123 J.S.
REVISIONS
PROJECT ENG. C. MEDNICK
DO NOT SCALE DWG
SCALE FULL
USED ON
NO REQ'D 1 PER
Bally / MIDWAY MFG. CO.
FRANKLIN PK. ILL.
ARTIFICIAL ARTIST T.M.
A080 - 91671 - G000
PART NO.
M051 - 00304 - G017
DATE 4/29/85



PROJECT ENG: S. ACKERMAN		USED ON	Bally / MIDWAY MFG. CO. FRANKLIN PK. ILL.
DO NOT SCALE DWG	HEAT TREAT / SCALE: FULL	NO. REQ'D: 1 PER	
DIM. TOLERANCES UNLESS SPECIFIED	DRN. td / CKD. / DATE 4/26/85	VENUS CPU SCHEMATIC DWG A080-91668-F0C0	PART NO. M051-00A15 -F002

REVISIONS

M051-00A15-F001 (2/4)
VENUS CPU
A084-91668-F000

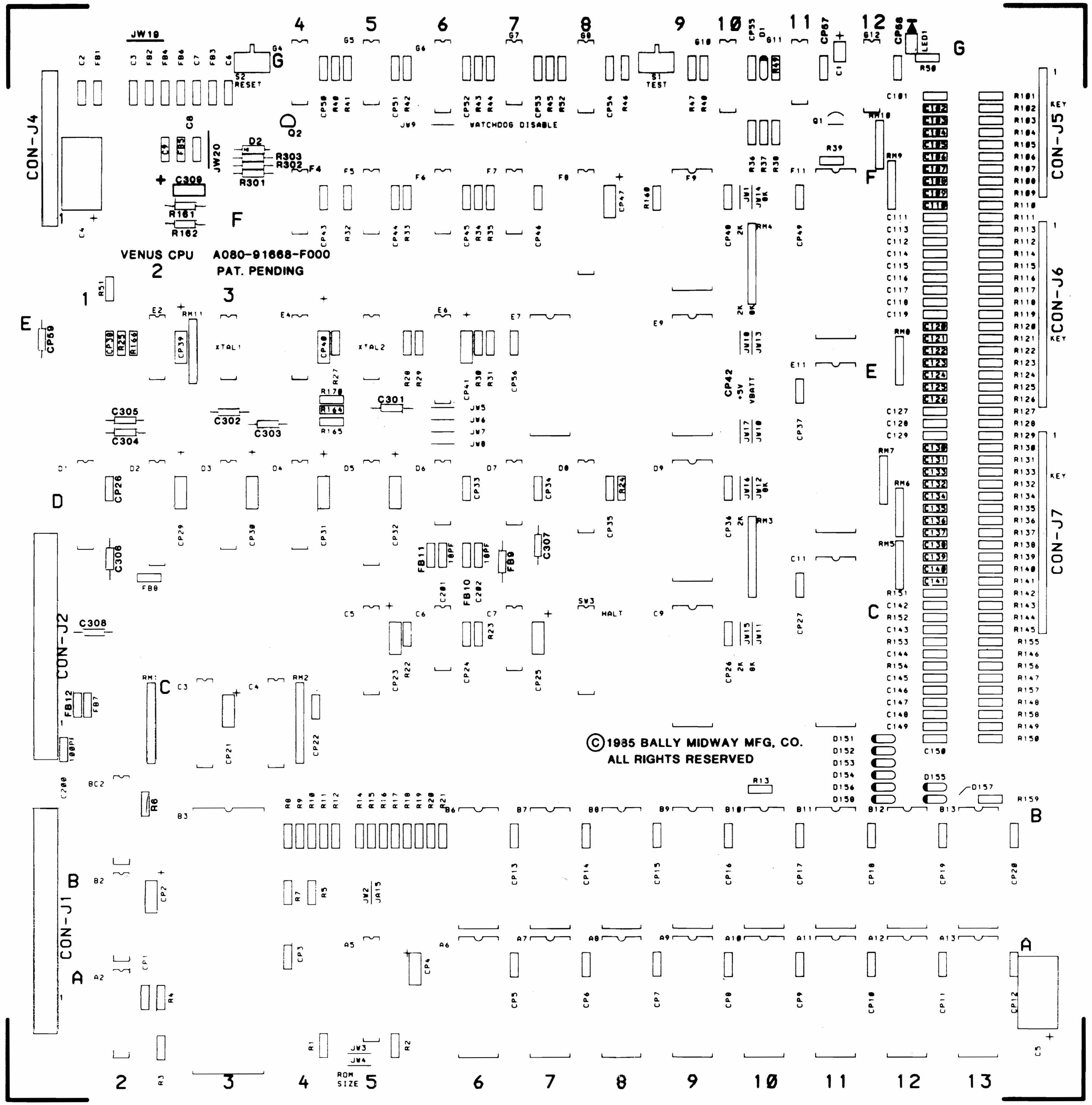
DESCRIPTION	QTY	DESIGNATION NO.	PART NUMBER
47 PF AX CR	1	C301	0A15-00800-0016
68 PF AX CR	2	C200, C307	0A15-00800-0017
150 PF AX CR	1	C302	0A15-00800-0018
220 PF AX CR	1	C308	0A15-00800-0014
270 PF AX CR	4	C201,C202,C304,C305	0A15-00800-0013
390 PF AX CR	32	C8,C9,C101-C110, C121-C130,C141-C150	0A15-00800-0001
820 PF AX CR	20	C111-C120,C131-C140	0A15-00800-0002
.01 UF AX CR	51	C2,C3,C6,C7,CP1, CP3,CP5-CP20, CP22,CP24,CP26-CP28,CP33-CP38, CP42-CP46,CP48-CP57,CP58,CP59	0A15-00800-0003
.1 UF RD TANT	1	C1	0A15-00800-0004
10 UF AX TANT	14	CP2,CP4,CP21, CP23,CP25,CP29-CP32,CP39-CP41, CP47,C309	0A15-00800-0006
470 UF AX ELEC	2	C4,C5	0A15-00800-0005
100 OHM 1/4W 5%	5	R50,R164-R166,R170	100E-00005-0033
110 OHM 1/4W 5%	40	R101-R140	100E-00005-0034
1K OHM 1/4W 5%	2	R3,R40	100E-00005-0061
1.2K OHM 1/4W 5%	10	R141-R150	100E-00005-0063
3.3K OHM 1/4W 5%	2	R159,R301	100E-00005-0074
4.7K OHM 1/4W 5%	45	R1,R2,R4-R12, R14-R22,R24,R25, R27-R38,R41-R43, R46-R48,R51,R52, R160-R162	100E-00005-0079
10K OHM 1/4W 5%	5	R13,R44,R45,R302, R303	100E-00005-0088
20K OHM 1/4W 5%	1	R23	100E-00005-0095
47K OHM 1/4W 5%	1	R39	100E-00005-0104
56K OHM 1/4W 5%	8	R151-R158	100E-00005-0106
200K OHM 1/4W 5%	1	R49	100E-00005-0123
100 OHM SERIES 8 PIN SIP	1	RM11	102E-00004-0041
3.3K OHM 6 PIN SIP	2	RM5,RM6	102E-00004-0043
4.7K OHM 10 PIN SIP	2	RM3,RM4	102E-00004-0026
10K OHM 6 PIN SIP	4	RM7-RM10	102E-00004-0031
10K OHM 10 PIN SIP	2	RM1,RM2	102E-00004-0030
1N4148	9	D151-D158,D2	103E-00002-0005
1N5817	1	D1	103E-00003-0009
2N3904	1	Q2	104E-00001-0006
2N5305	1	Q1	104E-00007-0003
2068	1	G12	0A15-00803-0025
4001	1	G11	0A15-00803-0007
4017	1	G8	0A15-00803-0008
4066	1	G7	0A15-00803-0009
74LS04	1	C6	0A15-00803-0010
74LS05	1	G5	0A15-00803-0011
74LS08	1	D7	0A15-00803-0012

M051-00A15-F001 (3/4)
VENUS CPU
A084-91668-F000

DESCRIPTION	QTY	DESIGNATION NO.	PART NUMBER
74LS14	1	F7	0A15-00803-0013
74LS20	1	F4	0A15-00803-0014
74LS27	1	F6	0A15-00803-0015
74LS32	1	G4	0A15-00803-0016
74LS74	1	F5	0A15-00803-0017
74LS161	2	D8,G6	0A15-00803-0018
74LS148	1	G10	0A15-00803-0067
74LS241	1	C5	0A15-00803-0019
74LS245	2	C3,C4	0A15-00803-0020
74LS341	3	A2,B2,BC2	0A15-00803-0081
74S04	1	D6	0A15-00803-0021
74S32	1	C7	0A15-00803-0022
74S74	2	E2,E4	0A15-00803-0023
RAM LOW POWER	2	D9,F9	0A15-00803-0026
RAM 2KX8	2	C9,E9	0A15-00803-0038
H-T PAL	1	D5	0A15-00803-0003
V-T PAL	1	D2	0A15-00803-0004
MISC V&H PAL	1	D4	0A15-00803-0005
MISC CUSTOM PAL	1	D3	0A15-00803-0006
CPU WTS PAL	1	E6	0A15-00803-0043
CPU IOC PAL	1	F8	0A15-00803-0044
CPU RMD PAL	1	A5	0A15-00803-0045
6821	3	C11,E11,F11	0A15-00803-0002
6840	1	E7	0A15-00803-0068
68000 CPU	1	B3	0A15-00803-0001
EPROM/ROM 0	1	A6	
EPROM/ROM 1	1	B6	
EPROM/ROM 2	1	A7	
EPROM/ROM 3	1	B7	
EPROM/ROM 4	1	A8	SEE ROM/EPROM CHART
EPROM/ROM 5	1	B8	
EPROM/ROM 6	1	A9	
EPROM/ROM 7	1	B9	
EPROM/ROM 8	1	A10	
EPROM/ROM 9	1	B10	
EPROM/ROM 10	1	A11	
EPROM/ROM 11	1	B11	
EPROM/ROM 12	1	A12	
EPROM/ROM 13	1	B12	
EPROM/ROM 14	1	A13	
EPROM/ROM 15	1	B13	
FERRITE BEAD	12	FB1-FB12	0A15-00804-0004
20 PIN IC SOCKET	3	D3,D4,E6	110E-00001-0005
24 PIN IC SOCKET	4	A5,D2,D5,F8	110E-00001-0009
28 PIN IC SOCKET	21	A6-A13,B6-B13, C9,D9,E7,E9,F9	110E-00001-0010
40 PIN IC SOCKET	3	C11,E11,F11	110E-00001-0011
64 PIN IC SOCKET	1	B3	110E-00001-0016
12 PIN KK156 RT	1	J4	0017-00021-1214
16 PIN KK100 RT	1	J5	0017-00021-1266

M051-00A15-F001 (4/4)
VENUS CPU
A084-91668-F000

DESCRIPTION	QTY	DESIGNATION NO.	PART NUMBER
23 PIN KK100 RT	1	J6	0017-00021-1267
25 PIN KK100 RT	1	J7	0017-00021-1268
40 PIN KK100	2	J1,J2	0A15-00804-0005
JUMPER WIRE	20	JW1-JW20	0A15-00804-0002
GREEN LED	1	LED 1	119E-00001-0001
SWITCH PC MTG	2	SW1,SW2	0017-00032-0038
SWITCH 10-POS DIP	1	SW3	113E-00001-0004
16 MHZ CLK OSC	1	XTAL 2	109E-00002-0001
40 MHZ CLK OSC	1	XTAL 1	109E-00002-0007
VENUS CPU	1		A080-91668-F000



COMPONENT SIDE
NOMENCLATURE

THIS DWG. IS CONFIDENTIAL & PROPERTY OF MIDWAY MFG. CO.

DIM. TOLERANCES	FIRST USED ON		
UNLESS OTHERWISE SPEC.	DRN	DATE 4/22/85	SCALE
CONCENTRICITY T.I.R. .002	MECH CHK	MAT'L	
FRACTIONAL ± 1/64	ELEC CHK	FINISH	
DECIMAL ± .005			
HOLE DIA. + .002 − .000			
ANGLE ± 1/2°			
DO NOT SCALE DWG.			

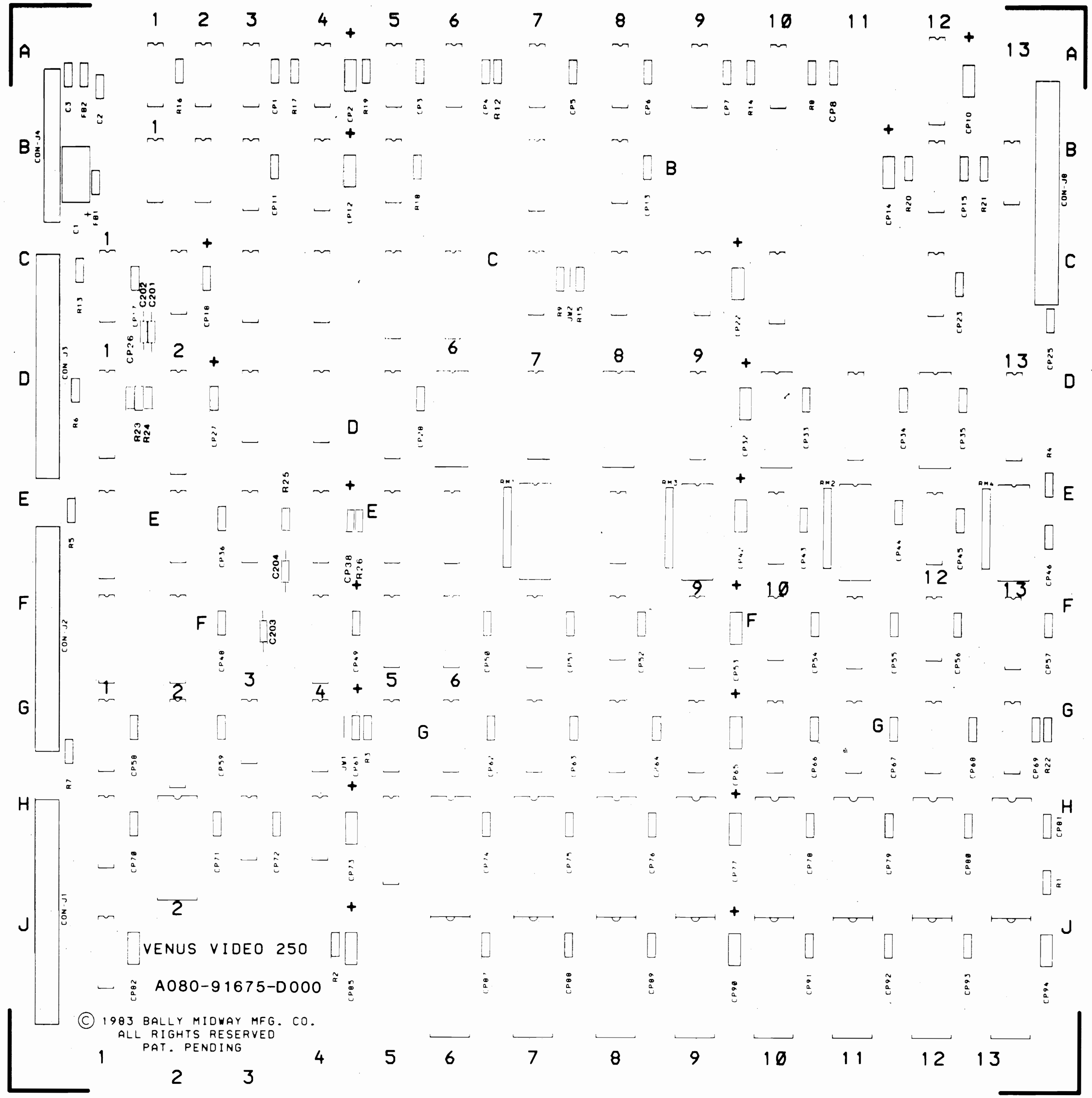
MIDWAY MFG. CO.
FRANKLIN PK., IL. 60131 — A BALLY CO.

ASSY DRAWING
VENUS CPU
A084-91668-F000

SHEET 1 of 4 (SEE SHEET 2, 3, 4)

REVISIONS

PART NO.
M051-00A15-F001



THIS DWG. IS CONFIDENTIAL & PROPERTY OF MIDWAY MFG. CO.

DIM. TOLERANCES UNLESS OTHERWISE SPEC. CONCENTRICITY T.I.R. .002 FRACTIONAL ± 1/64 DECIMAL ± .005 HOLE DIA. + .002 − .000 ANGLE ± 1/2° DO NOT SCALE DWG.	FIRST USED ON DRN: C.L. DATE: 4/12/85 SCALE MECH CHK MAT'L ELEC CHK FINISH	MIDWAY MFG. CO. FRANKLIN PK., IL. 60131 A BALLY CO. ASSY DRAWING VENUS VIDEO 250 A084-91675-D000	SHEET 1 of 3 (SEE "A-MAIN FILE") REVISIONS PART NO. M0·5·1 -0·0·A·1·5 -D·0·0·9

M051-00A15-D009 (2/3)
VENUS VIDEO 250
A084-91675-D000

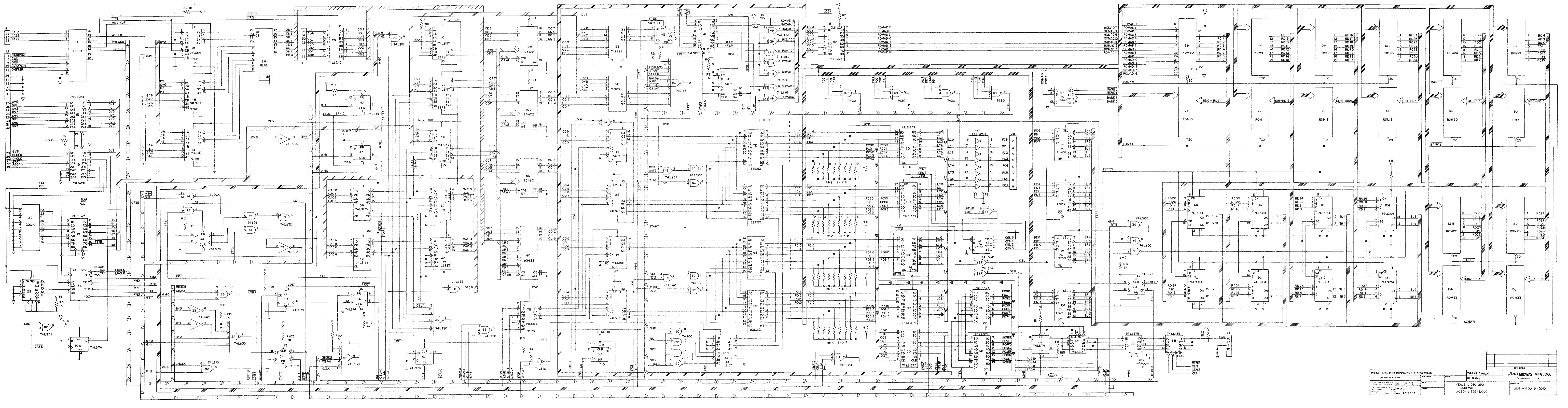
CROSS REFERENCE

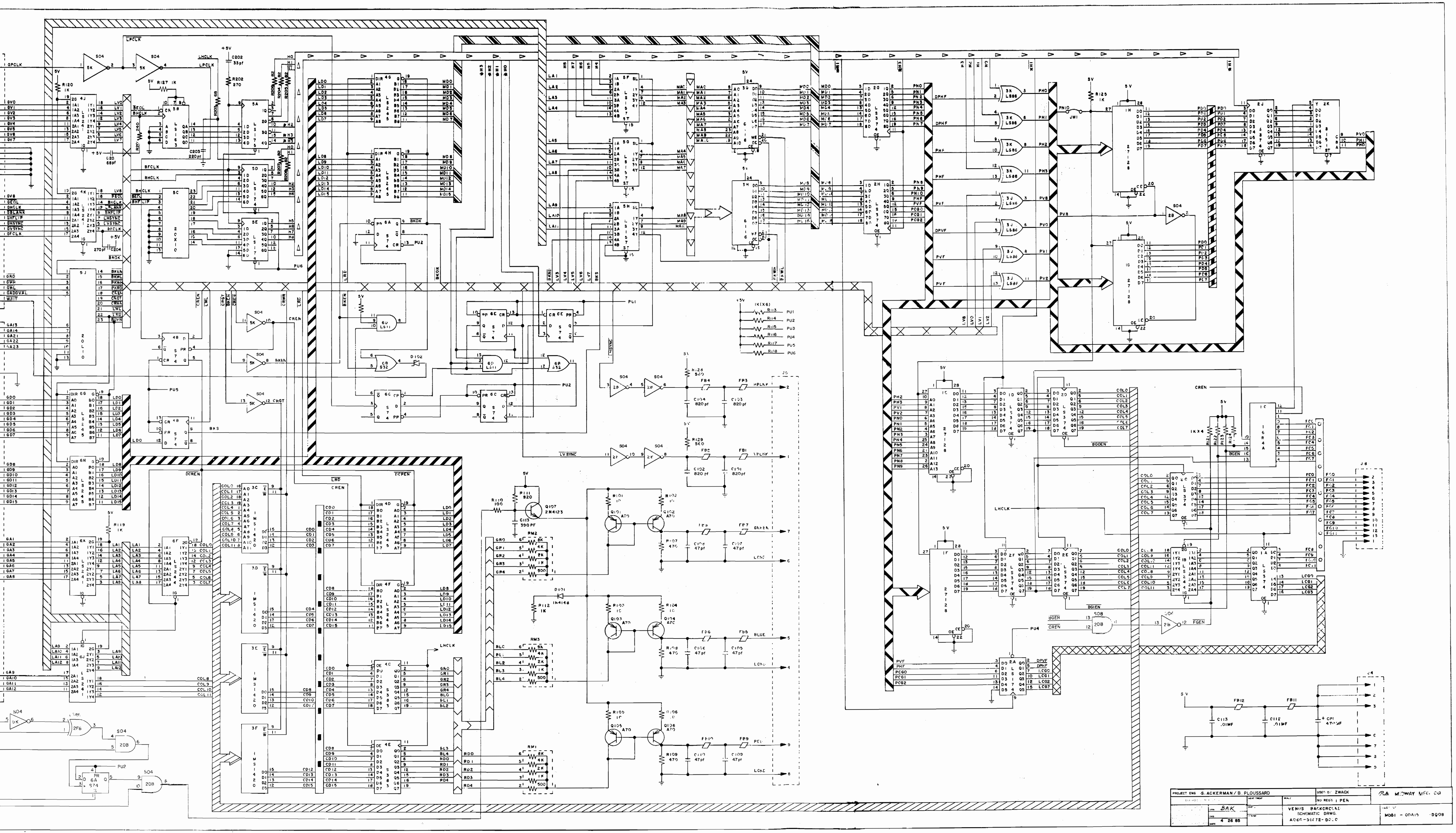
DESCRIPTION	QTY.	DESIGNATION	PART NUMBER
100PF AX CR.	2	C201,C202	0A15-00800-0012
270PF AX CR.	2	C203,C204	0A15-00800-0013
470 MF AX ELEC	1	C1	0A15-00800-0005
10 MF AX TANT	18	CP2,CP10,CP12, CP14,CP18,CP22, CP27,CP32,CP38, CP42,CP49,CP53, CP61,CP65,CP73, CP77,CP85,CP90	0A15-00800-0006
.01 UF AX CR.	60	C2,C3,CP1,CP3-8, CP11,CP13,CP15, CP17,CP23,CP25, CP26,CP28,CP33- CP36,CP43-46, CP48,CP50-52, CP54-59,CP62- CP64,CP66-72, CP74-76,CP78- CP82,CP87-89, CP91-94	0A15-00800-0003
68 OHM 1/4W	2	R25,R26	100E-00005-0029
100 OHM 1/4W	2	R23,R24	100E-00005-0033
1K OHM 1/4W	20	R1-9,R12-22	100E-00005-0061
1K OHM 10 PIN SIP	4	RM1-RM4	102E-00004-0013
7420	2	IC 10F,12F	0A15-00803-0027
74S00	1	IC 12C	0A15-00803-0033
74S08	1	IC 1A	0A15-00803-0032
74S133	1	IC 5G	0A15-00803-0031
74S283	2	IC 5E,5F	0A15-00803-0030
74S374	1	IC 2F	0A15-00803-0066
74LS00	3	IC 7A,8C,3G	0A15-00803-0046
74LS04	1	IC 2B	0A15-00803-0010
74LS10	1	IC 9A	0A15-00803-0047
74LS20	2	IC 8A,8B	0A15-00803-0014
74LS30	3	IC 2A,2C,5B	0A15-00803-0048
74LS32	2	IC 1B,8F	0A15-00803-0016
7474	4	IC 3A,4A,5A,6A, 10A,7C	0A15-00803-0080
74LS74	2	IC 3H,4H	0A15-00803-0017
74LS86	2	IC 13B,9C	0A15-00803-0049
74LS125	2	IC 6F	0A15-00803-0050
74LS139	1	IC 1C,1G,1H,1J,3D, 4D,7B,10C	0A15-00803-0051
74LS157	8		0A15-00803-0053
74LS161	1	IC 4G	0A15-00803-0018
74LS163	1	IC 2E	0A15-00803-0054
74LS169	4	IC 6E,8E,10E,12E	0A15-00803-0055

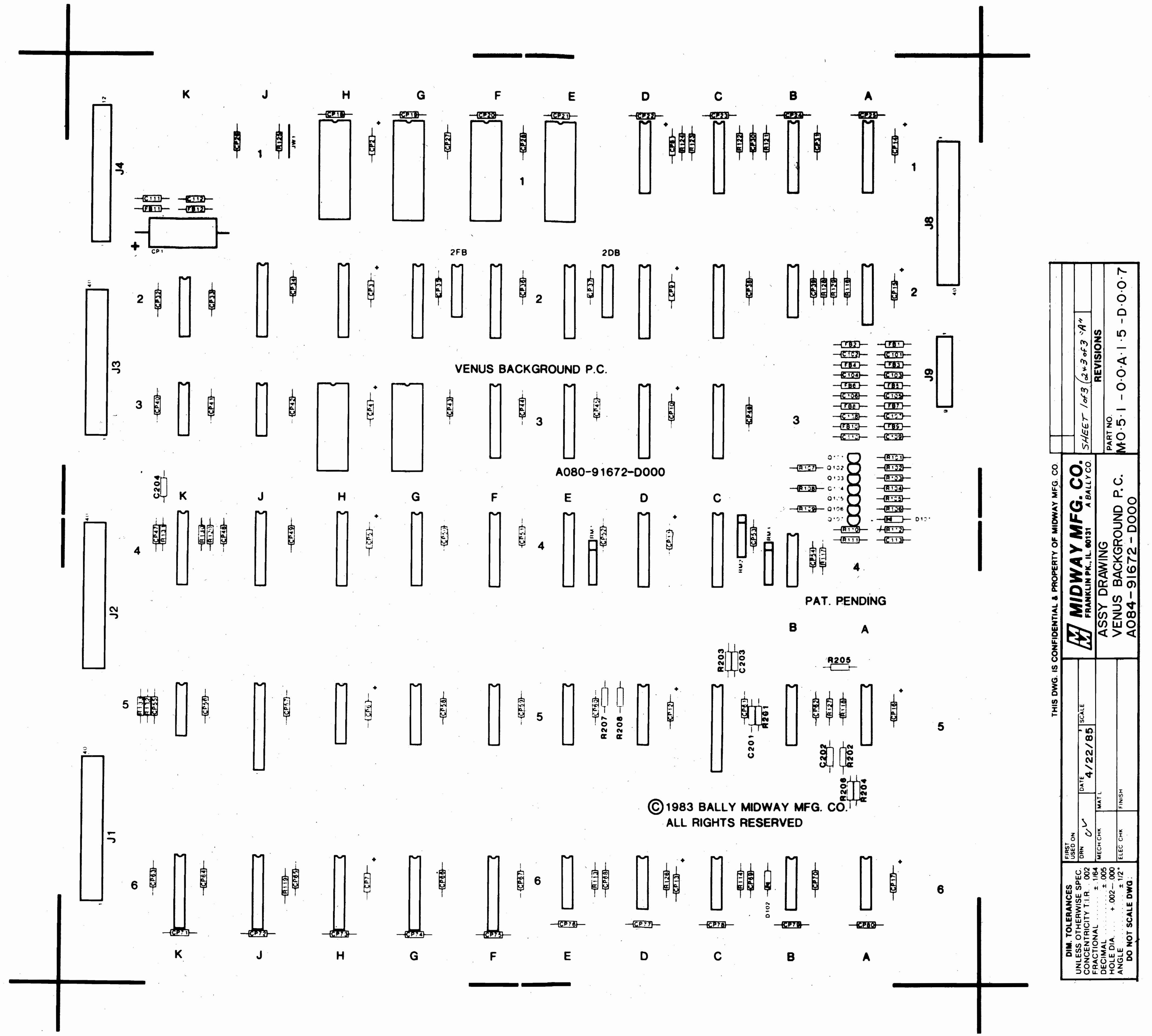
M051-00A15-D009 (3/3)
VENUS VIDEO 250
A084-91675-D000

CROSS REFERENCE

DESCRIPTION	QTY.	DESIGNATION	PART NUMBER
74LS174	2	IC 4B,4E	0A15-00803-0056
74LS175	3	IC 3B,3E,12B	0A15-00803-0057
74LS194	8	IC 6G-13G	0A15-00803-0058
74LS240	1	IC 12A	0A15-00803-0059
74LS245	1	IC 2G	0A15-00803-0020
74LS258	4	IC 7F,9F,11F,13F	0A15-00803-0061
74LS273	3	IC 5D,4F,5H	0A15-00803-0062
74LS283	2	IC 3C,4C	0A15-00803-0063
74LS341	2	IC 1D,1E	0A15-00803-0081
74LS374	6	IC 5C,6C,7D,9D, 11D,13D	0A15-00803-0064
2K X 8 RAM	1	IC 2H	0A15-00803-0065
93422	4	IC 6D,8D,10D,12D	0A15-00803-0029
82S212	4	IC 7E,9E,11E,13E	0A15-00803-0028
PAL FGBDCD	1	IC 1F	0A15-00803-0039
PAL HCT	1	IC 2D	0A15-00803-0040
EPROM KIT	16	IC 6H-13H,6J-13J	SEE EPROM/ROM CHART
20 PIN SOCKET	1	ICS 1F	110E-00001-0005
22 PIN SOCKET	8	ICS 6D,8D,10D, 12D,7E,9E,11E 13E	110E-00001-0006
24 PIN SOCKET SKINNY	1	ICS 2D	110E-00001-0009
24 PIN SOCKET	1	ICS 2H	110E-00001-0007
28 PIN SOCKET	16	ICS 6H-13H,6J-13J	110E-00001-0010
FERRITE BEAD	2	FB1-FB2	0A15-00804-0004
JUMPER WIRE	2	JW1,JW2	0A15-00804-0002
12 PIN RT ANGLE CONN KK156	1	J4	0017-00021-1214
40 PIN RT ANGLE CONN RIBBON	3	J1,J2,J8	0A15-00804-0005
VENUS VIDEO 250	1	PCB	A080-91675-D000


REVISIONS
PROJECT ENG. B. PLOUSSARD / S. ACKERMAN
DO NOT SCALE DWG
USED ON ZWACK
NO. REQ'D 1 PER
Bally / MIDWAY MFG. CO.
DATE 4/12/85
VENUS VIDEO 250
SCHEMATIC
A080-91675-D000
PART NO.
M051-00A15-D010


PROJECT ENG S. ACKERMAN / B. PLOUSSARD
USED ON ZWACK
NO REQ'D 1 PER
MIDWAY MFG. CO
DRN BAK
DATE 4 26 85
VENUS BACKGROUND
SCHEMATIC DRWG.
PART NO
M051 - 00A15 - D008

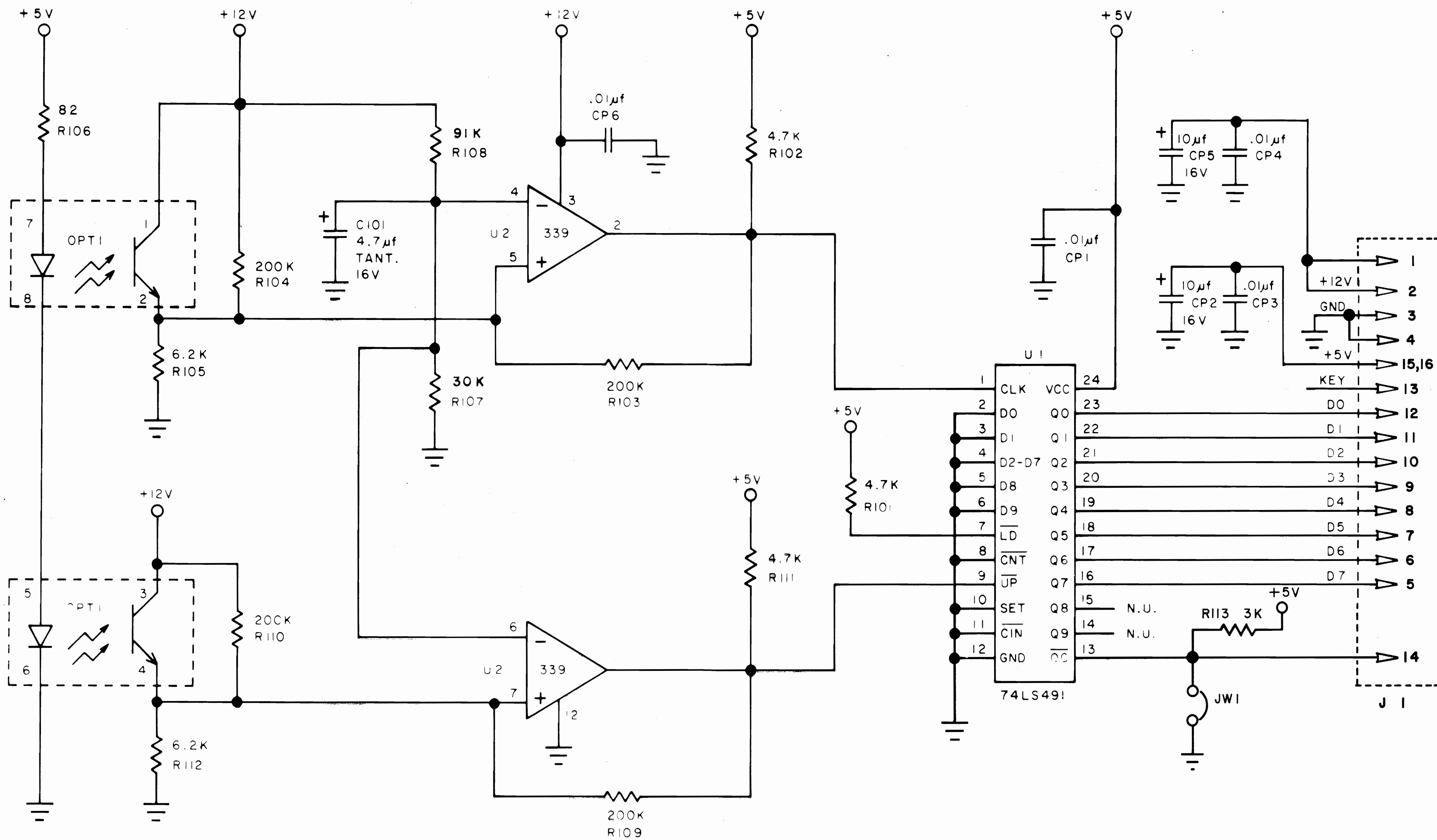

VENUS BACKGROUND P.C.
A080-91672-D000
PAT. PENDING
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MIDWAY MFG. CO.
FRANKLIN PK., IL 60131
A BALLY CO
ASSY DRAWING
VENUS BACKGROUND P.C.
A084-91672-D000
PART NO
MO-5-1-0-0-A-1-5-D-0-0-7
REVISIONS
4/22/85
DIM. TOLERANCES
DO NOT SCALE DWG.

CROSS REFERENCE

DESCRIPTION	QTY	DESIGNATION NO.	PART NUMBER
33 PF AX CR	1	C202	0A15-00800-0015
47 PF AX CR	6	C105-C110	0A15-00800-0007
68 PF AX CR	1	C201	0A15-00800-0017
390 PF AX CR	1	C113	0A15-00800-0001
820 PF AX CR	4	C101-C104	0A15-00800-0002
.01 UF AX CR	64	C111,C112,CP18-CP28,CP30-CP80	0A15-00800-0003
10 UF AX TANT	16	CP2-CP17	0A15-00800-0006
470 UF AX ELEC	1	CP1	0A15-00800-0005
10 OHM 1/4W 5%	6	R101-R106	100E-00005-0011
68 OHM 1/4W 5%	1	R203	100E-00005-0029
82 OHM 1/4W 5%	5	R204-R208	100E-00005-0031
100 OHM 1/4W 5%	5	R110,R130-R133	100E-00005-0033
240 OHM 1/4W 5%	1	R201	100E-00005-0043
270 OHM 1/4W 5%	1	R202	100E-00005-0044
300 OHM 1/4W 5%	3	R107-R109	100E-00005-0046
560 OHM 1/4W 5%	2	R128,R129	100E-00005-0054
820 OHM 1/4W 5%	1	R111	100E-00005-0058
1K OHM 1/4W 5%	15	R112-R114,R116-R127	100E-00005-0061
.5 -8K OHM 6 PIN SIP	3	RM1-RM3	102E-00004-0036
1N4148	1	D101	103E-00002-0005
1N5817	1	D102	103E-00003-0009
MPSA70	6	Q101-Q106	104E-00002-0012
2N4123	1	Q107	104E-00001-0007
7411	1	IC 6D	0A15-00803-0034
74175	1	IC 5A	0A15-00803-0035
74S04	2	IC 2B,5K	0A15-00803-0021
74S08	1	IC 2DB	0A15-00803-0032
74S32	1	IC 6B	0A15-00803-0022
74S74	4	IC 4B,6A,6C,6E	0A15-00803-0023
74LS86	3	IC 3J,3K,2FB	0A15-00803-0049
74LS151	1	IC 2K	0A15-00803-0052
74LS157	3	IC 5F,5G,5H	0A15-00803-0053
74LS163	1	IC 5B	0A15-00803-0054
74LS174	3	IC 2A,5D,5E	0A15-00803-0056
74LS244	2	IC 1B,6F	0A15-00803-0060
74LS245	6	IC 4D,4F,4G,4H,6G,6H	0A15-00803-0020
74LS341	4	IC 4J,4K,6J,6K	0A15-00803-0081
74LS374	9	IC 1A,1D,2C,2D,2E,2F, IC 2G,2H,2J	0A15-00803-0064
74S383	2	IC 4C,4E	0A15-00803-0036
HCT PAL	1	IC 5C	0A15-00803-0040

CROSS REFERENCE

DESCRIPTION	QTY	DESIGNATION NO.	PART NUMBER
BGBCPE PAL	1	IC 1C	0A15-00803-0041
BGBDCD PAL	1	IC 5J	0A15-00803-0042
2Kx8 RAM	2	IC 3G,3H	0A15-00803-0038
4Kx4 RAM	4	IC 3C,3D,3E,3F	0A15-00803-0037
EPROM/ROM	4	IC 1E,1F,1G,1H	SEE EPROM/ROM CHART
20 PIN IC SOCKET	5	ICS 1C,3C,3D,3E,3F	110E-00001-0005
24 PIN IC SOCKET	2	ICS 3G,3H	110E-00001-0007
24 PIN IC SOCKET SKINNY	2	ICS 5C,5J	110E-00001-0009
28 PIN IC SOCKET	4	ICS 1E,1F,1G,1H	110E-00001-0010
FERRITE BEAD	12	FB1-FB12	0A15-00804-0004
JUMPER WIRE	1	JW1	0A15-00804-0002
9 PIN KK100 RT ANGLE	1	J9	0017-00021-1269
12 PIN KK156 RT ANGLE	1	J4	0017-00021-1214
40 PIN KK100 RT ANGLE	3	J1,J2,J8	0A15-00804-0005
VENUS BACKGROUND	1	PCB	A080-91672-D000



JOHN BOYDSTON

c.b

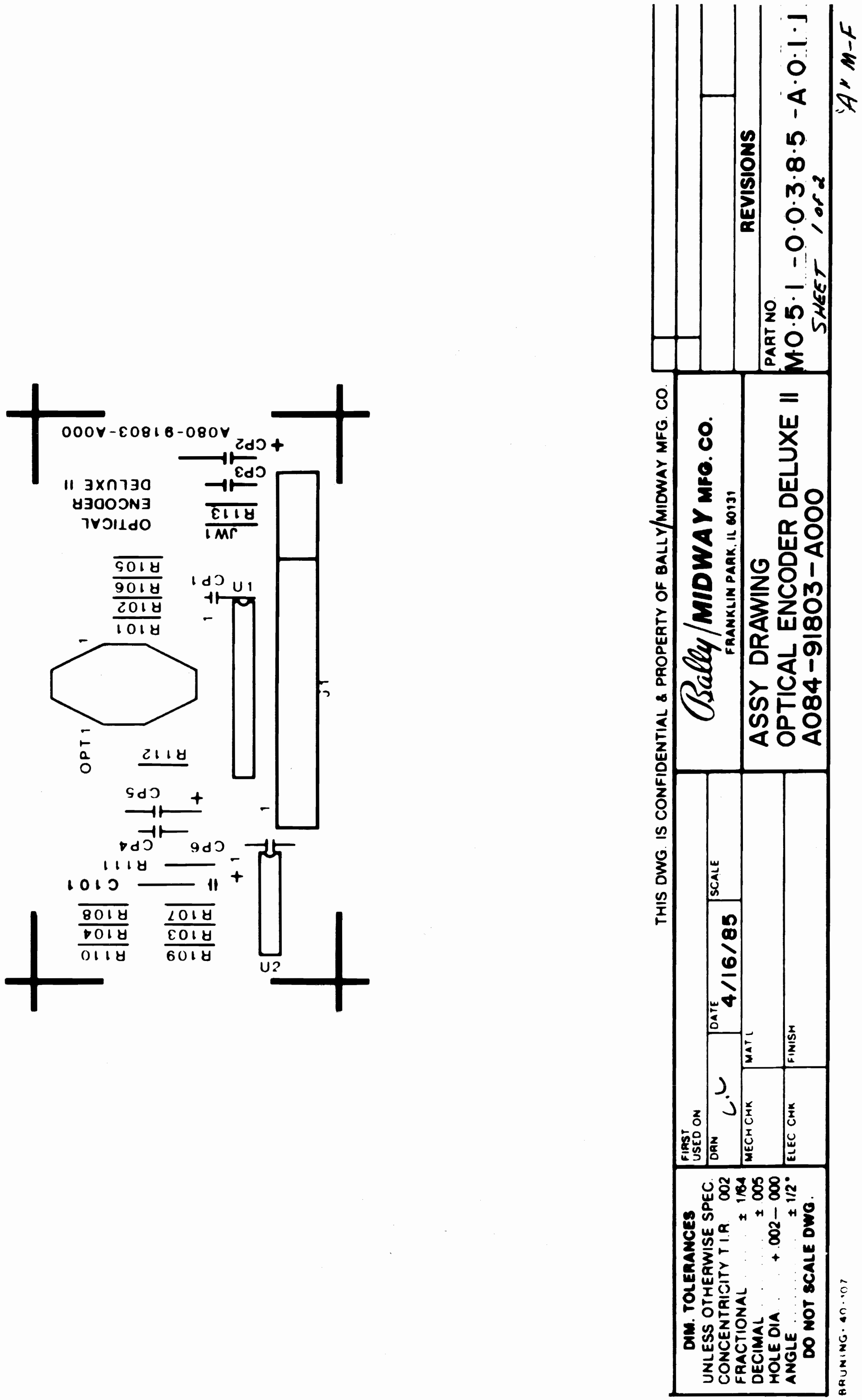
3/8/85

SCHEMATIC DRAWING

OPTICAL ENCODER DELUXE II

A084-91803-A000

M051-00385-A012



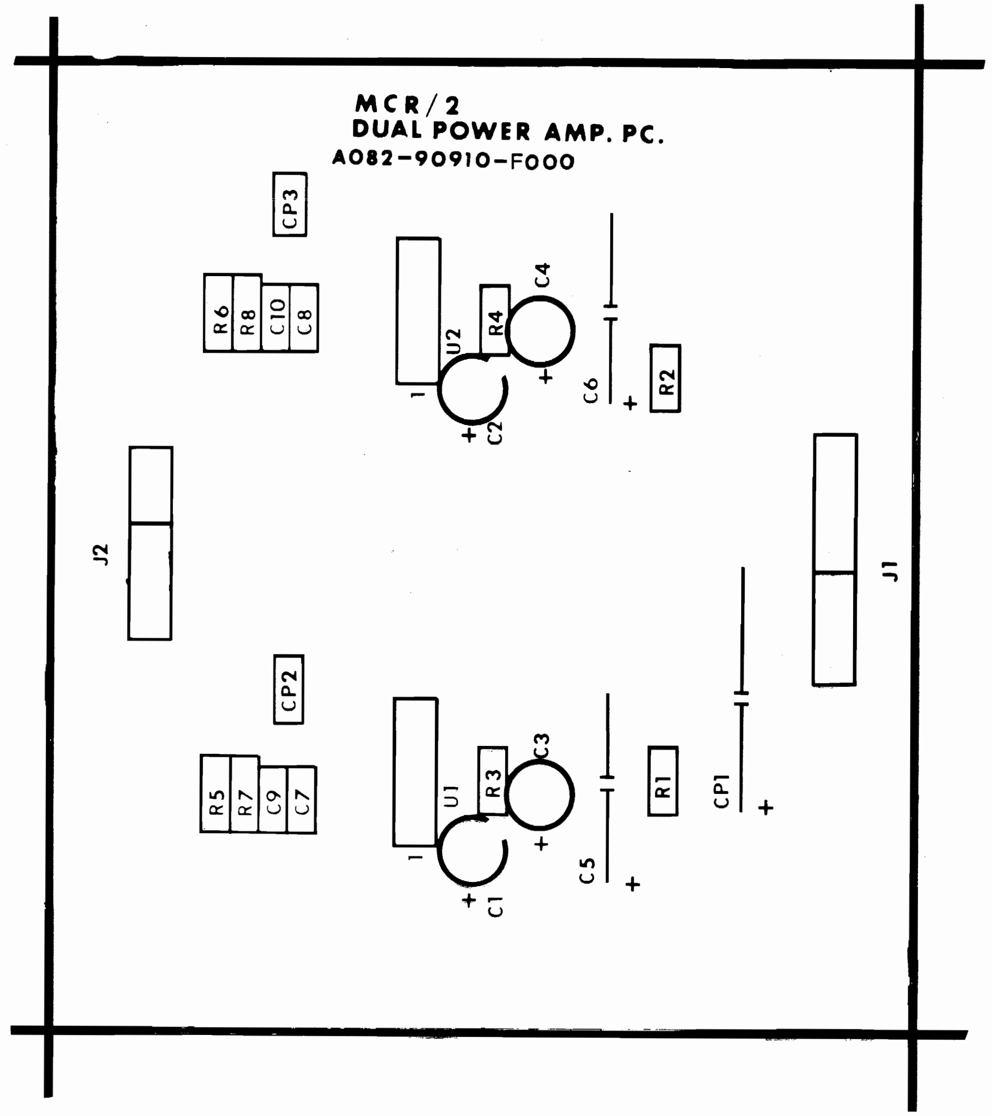
M051-00385-A011 (2/2)
OPTICAL ENCODER DELUXE II
A084-91803-A000

CROSS REFERENCE

DESCRIPTION	QTY.	DESIGNATION	PART NUMBER
.01UF AX. CR.	4	CP1,CP3-CP4,CP6	0628-00800-0100
4.7UF RAD. TANT	1	C101	0628-00800-0200
10UF AX. ELECT.	2	CP2,CP5	0628-00800-0300
82 OHM 1/4W 5%	1	R106	100E-00005-0031
3K OHM 1/4W 5%	1	R113	100E-00005-0073
4.7K OHM 1/4W 5%	3	R101,R102,R111	100E-00005-0079
6.2K OHM 1/4W 5%	2	R105,R112	100E-00005-0083
30K OHM 1/4W 5%	1	R107	100E-00005-0099
91K OHM 1/4W 5%	1	R108	100E-00005-0113
200K OHM 1/4W 5%	4	R103,R104,R109,R110	100E-00005-0123
74LS491	1	U1	0628-00803-2700
LM339	1	U2	0628-00803-2900
OPTO SWITCH DUAL	1	OPT 1	120E-00001-0010
JUMPER WIRE	1	JW1	117E-00001-0003
16 PIN KK156 RIGHT ANGLE	1	J1	0017-00021-1287
OPTICAL ENCODER DELUXE	1	PCB	A080-91803-A000

DESIGNATION LIST

DESIGNATION NO.	DESCRIPTION
C1,C2	4.7 MF 25V RD TANT
C3,C4	22 MF 6V RD TANT
C5,C6	470 MF 6V AX ELEC
C7-C10	.1 MF 50V AX CER
CP1	220 MF 25V AX ELEC
CP2,CP3	.1 MF 50V AX CER
R1,R2	2.7K OHM 1/4W 5% CRBN
R3,R4	27 OHM 1/4W 5% CRBN
R5-R8	1 OHM 1/2W 5% CRBN
U1,U2	MB3730
J1	7 PIN
J2	5 PIN
HSA1,2	HEATSINK ASSY
MH1-MH4	1/4" SPACER



CROSS REFERENCE LIST

DESCRIPTION	QTY	DESIGNATION NO.	PART NUMBER
.1 MF 50V AX CER	6	C7-C10,CP2,CP3	0986-00800-1100
4.7 MF 25V RD TANT	2	C1,C2	0986-00800-3100
22 MF 6V RD TANT	2	C3,C4	0986-00800-1600
220 MF 25V AX ELEC	1	CP1	0986-00800-3200
470 MF 6V AX ELEC	2	C5,C6	0986-00800-1700
1 OHM 1/2W 5%	4	R5-R8	0062-02603-1XXX
27 OHM 1/4W 5%	2	R3,R4	0062-06883-1XXX
2.7K OHM 1/4W 5%	2	R1,R2	0062-19983-1XXX
MB3730	2	U1,U2	0066-188XX-XX4X
TIN .045 SQ PINS	12	J1,J2	0017-00033-0480
HEATSINK ASSY	2	HSA1,2	A986-00010-E000
1/4" SPACER	4	MH1-MH4	0017-00042-0320
PC BOARD	1		A080-90910-F000

PROJECT ENG: C. MEDNICK

THIS DWG IS CONFIDENTIAL & PROPERTY OF BALLY/MIDWAY MFG. CO.

DIM. TOLERANCES UNLESS OTHERWISE SPEC.	FIRST USED ON: TRON	Bally/MIDWAY MFG. CO. FRANKLIN PARK, IL 60131	REVISIONS
CONCENTRICITY T.I.R. .002	DRN: M. M. / DATE: 6/14/84 / SCALE:	DUAL PWR AMP ASSEMBLY DRWNG A084-90910-F000	PART NO. M051-00986-F010
FRACTIONAL ± 1/64	MECH CHK / MAT'L		
DECIMAL ± .005	ELEC CHK / FINISH		
HOLE DIA. + .002 — .000			
ANGLE ± 1/2°			
DO NOT SCALE DWG.			

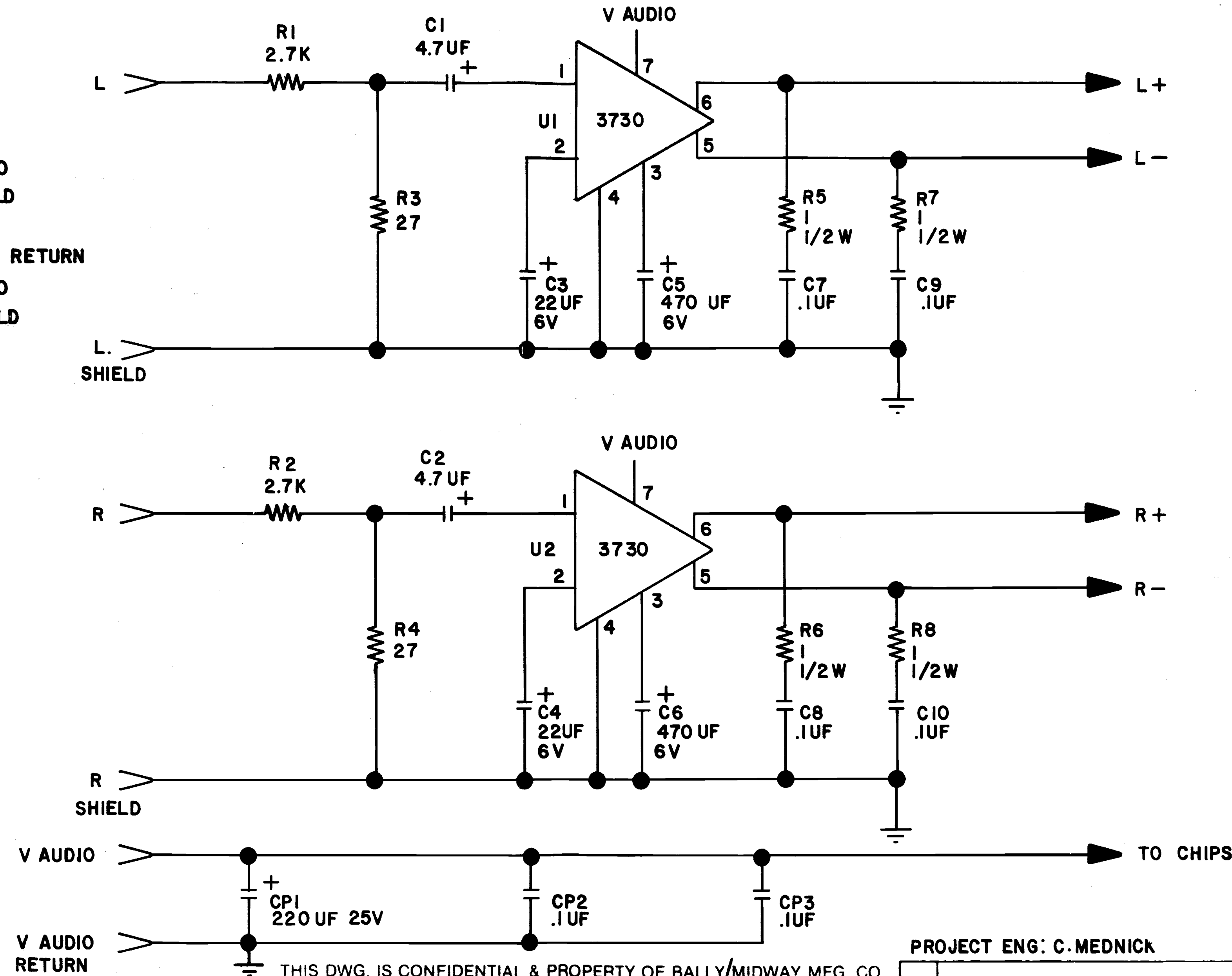
2 - 12

J1

PIN 1 — N.C.
2 — L. AUDIO
3 — L. SHIELD
4 — KEY
5 — V AUDIO RETURN
6 — R. AUDIO
7 — R. SHIELD
8 — V AUDIO

J2

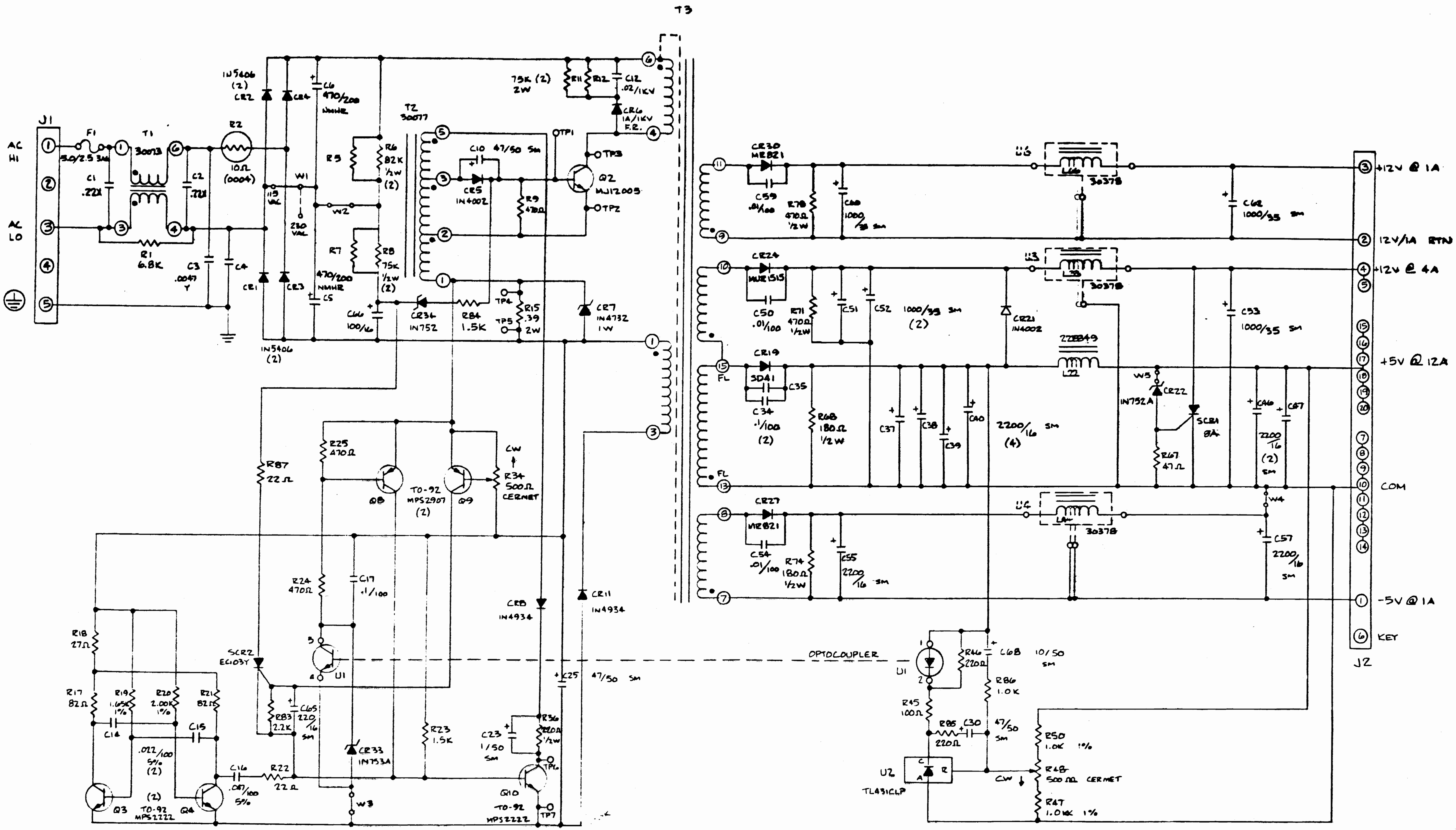
PIN 1 — R+
2 — R−
3 — KEY
4 — L+
5 — N.C.
6 — L−



PROJECT ENG: C. MEDNICK

DIM. TOLERANCES UNLESS OTHERWISE SPEC. CONCENTRICITY T.I.R. .002 FRACTIONAL ...... ±.1/64 DECIMAL .... ±.005 HOLE DIA. .... +.002—.000 ANGLE .... ±1/2° **DO NOT SCALE DWG.**	FIRST USED ON TRON; DRN M. M.; DATE 6/14/84; SCALE; MECH CHK; MAT'L; ELEC CHK; FINISH	Bally/MIDWAY MFG. CO. FRANKLIN PARK, IL 60131 — DUAL POWER AMP SCHEMATIC A080—90910—F000	REVISIONS; PART NO. M051-00986-F011

BRUNING• 40•107



0017-00003-0543			M051-00945-A087
QTY REQD	FSCM NO.	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION / MATERIAL SPECIFICATION
PARTS LIST			
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS DECIMALS ANGLES .XX .XXX	CONTRACT NO.		CONDOR INC. CAMARILLO, CALIF 93010 (805) 484-2851
MATERIAL	APPROVALS: DRAWN S. Winters	DATE 5-10-84	SCHEMATIC SP1016
FINISH	CHECKED		
NEXT ASSY / USED ON — APPLICATION	ISSUED		SIZE D / FSCM NO / DWG. NO. 31-SP1016 / REV X
DO NOT SCALE DRAWING			SCALE / SHEET

FOR ADDITIONAL ELECTRICAL INFORMATION, REFER TO MECH. DWG. NO. 0017-00003-0543.

NOTES: UNLESS OTHERWISE SPECIFIED.

1. RESISTOR VALUES ARE IN OHMS ¼W, 5%, C.F.
2. CAPACITOR VALUES IN MICROFARADS/VOLTS.

A945-00059-0000/0100/0200

UNI PWR SUPPLY CHASSIS ASS'Y # 125 SWUR + 125 SWCT

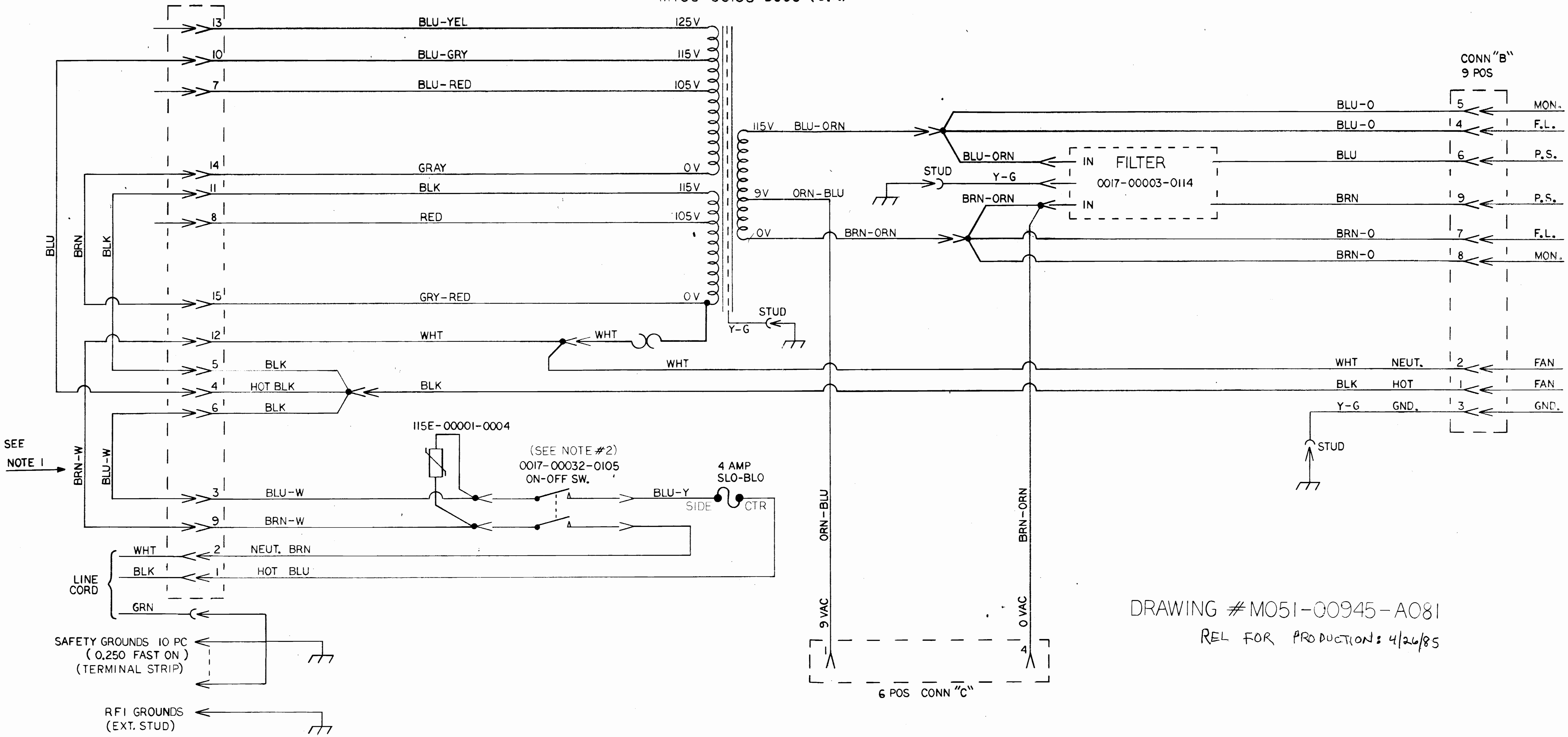
	105	115	210	220	230	240
BLK	5-8	5-11	8-14	11-14	11-14	11-14
BRN	14-15	14-15	—	—	—	—
BLU	4-7	4-10	4-7	4-7	4-10	4-13

NOTES: 1. JUMPERS ON CONN "A" 3-6 AND 9-12 CAN BE REPLACED WITH A SAFETY SW. AND/OR AUX. ON OFF SW.

2. MODEL A945-00059-0200 HAS A TERMINAL STRIP.
MODEL A945-00059-0100 HAS A ON/OFF SWITCH.
MODEL A945-00059-0000 HAS A ON/OFF SWITCH.

TRANSFORMER
MT00-00136-A000 (U.R.)
MT00-00136-B000 (C.T.)

CONN. "A"
15 POS



DRAWING # M051-00945-A081

REL FOR PRODUCTION: 4/26/85